BURGOYNE AND SARATOGA.

THE STORY OF THE CAMPAIGN TOLD BY AN ENGLISH OFFICER.

Interesting Incidents Seen from the British Side—Capt. Anburey's Letters—Burgoyne's Indian Allies—Fighting Qualities of the American Troops Commended.

The celebration a few weeks ago of the anniversary of the surrender of Burgoyne's army, in 1777, may perhaps give a little special timeliness in this country to the contemporary account of it by Capt. Thomas Anburey, as recalled and reviewed in the current number of *Macmillan's Magazine*. Anburey, who was a young officer of the British Twenty-ninth Regiment, wrote his experiences of campaigning here to a relative in England, and afterward published them.

A finer body of men could not be found in England, he says, than the army which Burgoyne assembled at Montreal in the spring of 1777. But it numbered "little more than 8,000 men, exclusive of Indians, Canadians, and provincials, few of whom proved of any value." It expected to encounter a numerically superior force of Americans, and it fully recognized that "with all the high discipline and intrepidity of the British soldier, as a bush fighter the American rifleman could not avoid being his superior." Hence it was well understood, writes Anburey, that the bayonet must be used on every possible occasion.

The plan was to cut off, by this march, the New England colonies from the rest of the country. It was a large contract for such a force to undertake, but aid was to be given by Clinton in New York. As is well known, after Burgoyne had reached the Hudson, he met two severe checks when Starke defeated one of his expeditionary parties at Bennington, with heavy loss, and when Herkimer, at Oriskany, defeated Col. St. Leger and the Mohawk Chief Brant, with a force of Tories and Indians, who were coöperating with Burgoyne. The article in *Macmillan's Magazine* says of Clinton's force, that "this, we all know, marched, when it did march, to the south and not to the north." In reality, Clinton's expedition, though delayed, went up to the Highlands and captured Forts Clinton and Montgomery, to create a diversion, and then burned Kingston and raided as far as Livingston's Manor, with intent to draw away a part of the troops of Gates. But this move did not accomplish its purpose.

Turning back to the letters of Anburey, we find him writing from the camp upon the banks of Lake Champlain, on the 23d of June, of almost fabulous masses of pigeons, which darkened the sky with their flight northward. Hundreds of them were knocked off the trees where they had alighted, by the soldiers, who were not too plentifully supplied with rations. A week later came the pageant of the embarkation of the army on the lake, moving majestically by brigades over the smooth, sunlit waters. At one point the whole array appeared at a single view, "in such perfect regularity as to form the most complete and splendid regatta you can possibly conceive." The troops are spoken of "as in the highest spirits, admirably disciplined, and remarkably healthy."

Ticonderoga was abandoned by the Americans, and Gens. Fraser and Reidesel followed in hot pursuit. When they came up with the enemy a sharp fight ensued, and during it occurred an incident of which Anburey gives this version: "A company of Americans came running across a clearing toward our men with arms clubbed, the universal sign of surrender, the English soldiers in consequence withholding their fire. The Yankees, however, when within ten yards of the grenadiers, suddenly presented their pieces, poured in a destructive volley, and fled."

Two hours after the action was over, the American rear guard having fallen back, Anburey was standing with a group of officers examining Col. Francis's papers, when a shot, evidently from a tree, struck down and severely wounded a Captain who was holding them. The incident causes the writer to reflect that "this war is very different from the last in Germany, as the life of an individual is sought with as much avidity as obtaining a victory over thousands."

At Skenesborough Burgoyne again drove back the Americans, causing them to retreat to Fort Edward. Anburey records his opinion that the Indians gave more trouble than aid, although he tells how, in one instance, they found a hog trough in the river, loaded it with their rifles, swam with it, and cut off a party of Americans. On the other hand, he tells the well-known story, which still, after a century, can only be read with horror, of the Indians who quarrelled as to who should have the reward for the escort of Jane Macrea, whereupon one of the savages settled it by burying his tomahawk in her head.

The difficulties under which Burgoyne advanced from Fort Edward are described, and the inability of people in England to understand them is spoken of. "Their ideas," says the writer of the letters, "march with a much greater rapidity than ever an army did." The roads were full of trees which the nimble axes of the Americans had felled, and forty bridges over creeks and ravines had to be constructed. Rains, too, impeded the march:

> The soldier, burdened as he is with arms and ammunition alone, upon a march in bad weather, when the weary foot slips back at every step, and a curse is provoked by the enormous weight that retards him, must be a very patient veteran who is not tempted to throw the whole contents of his knapsack into the mire—instances of which I saw in several of our marches, and this when they were loaded only with four days' provisions. I have often heard the exclamation, "Damn the provisions! We shall get more at the next encampment. The General won't let his soldiers starve."

However, at length the heights of Saratoga were reached, and as the wheat around the little village was just ripe, it was promptly reaped and threshed.

Meanwhile, the flying column sent to Bennington to seize provisions and artillery had been defeated with heavy loss. Anburey says of this disaster that the Germans were brave, but unfitted for backwoods warfare, and their heavy, brass-pointed caps, enormous swords, long-skirted coats and weighty canteens impeded them.

Marching down the Hudson, the troops of Burgoyne soon began to skirmish with the enemy, and Anburey found the Americans "too bloodthirsty," killing when they might capture, and so stirring up bitter feelings of revenge. One officer, a "Capt. Van Swearingham," as Anburey has it, was taken prisoner and brought before Gen. Fraser, who threatened to hang him to the nearest tree unless he answered certain questions. But the prisoner refused to give any information, and was turned over to Anburey's charge. The young officer mixed him some rum and water, and the American was a little more open, and chuckled as he drank. Hardly had the liquor been finished when the crack of a hundred rifles sounded the first note of the fiercest engagement that had yet been fought. "The courage and obstinacy of the Americans were the astonishment of every one, and we now are become fully convinced that they are not that contemptible army we had hitherto imagined them, but a resolute and numerous foe commanded by Generals whose activity leaves no advantage unimproved."

Throughout this battle, Lady Harriet Acland, the Baroness Reidesel, and two other officers' wives of the Sixty-second, Mesdames Harnage and Reynell, were crouching in a small shanty, which was soon taken for an operating room by the surgeons. "There was no other refuge, and the poor ladies, within the circle of fire where their husbands were engaged, had for four hours to be involuntary witnesses of the ghastly horrors of the operating table. As a climax to their woes, Major Harnage himself was soon brought in badly wounded, followed by the news that Lieut. Reynell was killed."

One of Anburey's duties was with a burying party, and he deplored the carelessness of some who "left heads, arms, and legs above ground." Sometimes fifteen or twenty soldiers were put into the same pit, while officers were buried separately. But at one time he laid three subalterns together, and he says that not one of them lived to be 17 years old.

Burgoyne's army was growing smaller, and the Americans were drawing in upon it. The enemy kept up their fire day and night, and in the night came "the dreary howl of wolves, attracted by hundreds to such an unwonted banquet." The American sharpshooters were in their element on the steep sides of the wooded ravines that formed a feature in every battle and skirmish. "The soldiers had nothing but discipline and native valor to make up for their immense inferiority in the use of the rifle to most of their foes."

On the 7th of October Burgoyne, with his three brigadiers, Phillips, Reidesel, and Fraser, marched out with a part of the force, with the double purpose of covering foraging parties and trying to break through the Americans along the river bank. The fierce battle known to us as Bemis's Heights resulted, and it practically sealed the fate of Burgoyne. He gained nothing, and lost heavily in troops. Anburey says that during this battle he found two American riflemen and a woman lying dead together in the forest, the woman's hand still gripping the cartridges with which she had been evidently keeping the sharpshooters supplied. In speaking of Arnold's great final charge, the author says "nothing can describe the anxiety on Gen. Burgoyne's face as he told me I must defend my post to the last man. The Americans came on through a storm of musketry and grapeshot. The post was defended with great spirit, and the enemy as gallantly assaulted it, led on by Gen. Arnold." In this battle of Bemis's Heights Gen. Fraser was mortally wounded, and the author describes the funeral the next day, with the enemy's firing as the procession went along.

As to the final disaster to Burgoyne, Anburey speaks in feeling terms. He writes from Boston a month later, as a prisoner:

> The state and situation of our army was truly calamitous, worn down by a series of incessant toils and stubborn actions; abandoned in our utmost distress by the Indians; weakened by the desertion and disappointed as to the efficacy of the Canadians and Provincials; the regular troops reduced by the late heavy losses of many of our best men and distinguished officers to only 3,500 effective men, of which number there were not quite two thousand British. In this state of weakness, no possibility of retreat, our provisions nearly exhausted, and invested by an army of four times our number that almost encircled us, who would not attack us from a knowledge of our situation, and whose works could not be assaulted in any part—in this perilous situation the men lay continuously upon their arms, the enemy incessantly cannonading us, and the rifle and cannon shot reaching every part of our camp.

The writer notes that Gates, at the surrender, kept his troops in camp, while the British were piling their arms, and afterward, in passing that camp, Anburey "did not observe a jaunty look or the least disrespect, but all was mute astonishment and pity, and it gave us no little pleasure to find that the antipathy so long shown us was consigned to oblivion." For Burgoyne he has no reproaches, regarding him as a good soldier, brave and ambitious, but unfortunate.

The story, as thus told, has the vividness which belongs to contemporary narratives, and it it has also some of the drawbacks which fall to such narratives, yet it gives a good idea of why Burgoyne was doomed. The distinction made between "regulars" and others by Anburey does not convey an accurate idea of Burgoyne's full strength, but it is not necessary here to supplement or correct his account.

THE PERIOD OF FIFTY YEARS.

It Does Not Give Prescriptive Title to the British Mining and Other Encroachments of Which Venezuela Complains.

WASHINGTON, Nov. 12.—If a search were made for the turning point in the Venezuelan boundary question, it would probably be found in Mr. Olney's despatch of July 13 last, when, setting aside Lord Salisbury's objection that Venezuela's claim "covers two-thirds of the colony of British Guiana" as "not being an insuperable objection to unrestricted arbitration," he proceeded to say that a weightier objection mentioned was that this claim "impeaches titles which have been unquestioned for many generations." He accordingly asked whether England would be satisfied with impeaching such titles to territory "in the exclusive, notorious, and actual use and occupation of either party for even two generations, or, say, for sixty years?" Would she "assent to unrestricted arbitration of all the territory in controversy," on the condition of a sixty-year period for acquiring a title by prescription?

That proved to be the key question, for after haggling unsuccessfully to make twenty or twenty-one years the period, following usages in America and England respectively, Lord Salisbury compromised, it appears, on fifty, and the problem was solved.

Fifty years carries the starting point back to the year 1846. Had Secretary Olney secured sixty, he would have put this point beyond the tracing of the Schomburgk line, in 1841, which is often regarded as the beginning of the active controversy. But the announcement of that line was not followed by settlements. It was drawn through uninhabited regions, and, so far from attempting to make it valid by colonization, the British Government expressly disclaimed attributing to it anything more than a tentative or preparatory value, and, on the renewal of Venezuela's protest, caused the posts set up along the line to be taken down. A little later, Lord Aberdeen, during the year 1844, suggested the line of the Orinoco as a boundary. This is a small stream not very far northwest of the Essequibo, and it may be shown in the arbitration that there were settlements not only of the Dutch, but of the English between those two streams.

In 1850, Mr. B. H. Wilson, the British Chargé d'Affaires in Venezuela, referring to a rumor which had been spread, declared in an official note that Venezuela "need not mistrust for a moment the formal declaration which is now made in the name and by the express order of her Majesty's Government, that Great Britain has no intention to occupy or encroach upon the territory in dispute." This last date falls within the length of period fixed as not adequate for giving prescriptive title by occupancy, and since there appears to have been no complaint by Venezuela of actual occupancy during the correspondence just mentioned, it would seem that the present period of fifty years, as agreed upon, will be sufficient to protect her rights.

One special incident that may be pointed out is that in 1836 Sir Robert Ker Porter, at that time in charge of British affairs at Caracas, on the complaint of certain merchants of Ciudad Bolivar, requested Venezuela to erect a lighthouse at Point Barima. It has since been denied that Great Britain was bound by his acts, so far as her boundary was concerned. Be this as it may, his note, which forms part of the case of Venezuela, shows clearly his impression, and that of the British merchants for whom he acted, as to the ownership of Point Barima, and it is further in evidence that the posts which would have given Point Barima to the English, under Schomburgk's survey, were removed. It seems clear, therefore, that the present holding of the mouth of the Orinoco at Point Barima by British officers and settlers will not secure a prescriptive title under the pending agreement.

But as a matter of fact the actual encroachments of which Venezuela complained when she broke off relations with England date back barely a dozen years. She asserts that as late as 1868 "the Governor of Demerara, in a decree on the division of registers, did not establish a more northerly line than that of the Pomaron." But however that may be, it appears from the documents that the famous visit of Magistrate Michael McTurk, in which he set up a claim to the regions watered by the rivers Waini, Marajuana, Amacuro, and Barima branch, was in 1884.

It was these encroachments that caused Venezuela to break off diplomatic intercourse with Great Britain in the year 1887. Since then such encroachments have steadily gone on. But the British gold-mining operations in the Yuruari region and in the Barima region, which have caused colonization, belong almost entirely to the last dozen years. It therefore seems to give a good margin when a round half century is adopted as the time within which title by exclusive settlement alone shall not be operative.

It may be said that there are British settlements older than fifty years west of the Essequibo, and hence within the extreme line which Venezuela claims, that will come within the pending agreement. But it is to be presumed that Venezuela will accede to such a disposition of them, provided that it is made by arbitration. Her objection all along has been that Great Britain would not consent to settling such matters by the decision of disinterested third parties, but required that a treaty should be directly made between the two countries fixing the boundary line. This would have resulted in a yielding of some territory held to be Venezuelan, without a judicial decision, which would have been a violation of her fundamental law.

JUDGE PETERS'S GREEN OLD AGE.

Both Health and Fortune Came to Him After He Had Passed Seventy.

LEXINGTON, Ky., Nov. 9.—Ex-Chief Justice B. J. Peters of the Kentucky Court of Appeals has just celebrated the ninety-first anniversary of his birth at his home in Mt. Sterling. Among those who gathered at his home to wish him many happy returns were Jefferson Rice, aged 90; Johnson Young, aged 89, and Wellesley O'Rear, aged 87.

Judge Peters served as a member of the Court of Appeals for sixteen years, and was then retired on account of his age. In an interview he said, in speaking of his age and his health:

"I was an invalid when I can first remember, and I continued to be one until I had lived out nearly the allotted span of man's life. The doctors told me when I was a boy that I would have to be very careful or I would never live to man's estate. After I was grown they said my time on earth was limited. No medicine they gave me afforded any relief to my apparently worthless stomach, and I concluded that I would extend my law practice into the mountains of eastern Kentucky, so that I could make a living and at the same time be on horseback and in the open air as much as possible.

"For thirty years I rode over the mountains in all kinds of weather and subsisted on the most meagre diet. Cornmeal mush was my staple article of food and whenever I could get fresh milk I would drink that. I could eat no meat and but few vegetables. After I had reached the age of seventy my stomach trouble disappeared, and since then and up to the last few years I have been a well man. Two years ago, however, I felt that I was beginning to fail, and the old machinery is rapidly wearing out and will soon have to be laid away. I subsist now chiefly on Jersey cream and cornmeal mush."

The Judge was for many years a leading horseman and imported into Montgomery county some of the best strains of thoroughbred blood. He also improved the saddle horse by importing some of the best stallions that ever came to Kentucky. Although living with one foot in the grave, as it were, Judge Peters by his lucky business ventures and economical habits succeeded in amassing a handsome fortune, and he is passing his last days in peace and plenty. True to his outdoor habits, he takes a ride in his buggy or carriage every day in the year unless it is extremely cold or unusually stormy and raw.

UNTOLD GOLD IN THE SEA.

MILLIONS OF BILLIONS, SAYS PROF. LIVERSIDGE OF SYDNEY.

A Prospector's Scheme for Catching It—Prof. Crocker of Columbia Suggests the Ocean's Gold Might Be Precipitated Electrically—Some Experiments.

A great many people are aware of the fact that sea water is said to hold in solution large quantities of gold, and perhaps some silver besides. In the strictly scientific world, however, this has been an open question for more than thirty years, and it has remained for an eminent chemist in the University of Sydney, Australia, Prof. Liversidge, to offer from a series of exhaustive tests not only conclusive proof of the presence of gold in the ocean, but also to determine with some degree of precision the amount.

The results of Prof. Liversidge's researches is little less than astounding. Where no previous investigator has been able to find more than a minute trace, which, if represented in figures, would not perhaps amount to a tenth of a grain per ton of sea water, this Australian professor has firmly demonstrated that all sea water contains more than half a grain per ton, and that much of it contains more than a full grain.

Of course, this amount is still very minute, for a grain of gold dissolved so as to remain in solution in water will not, when precipitated, show more than a thin film, like a trace of oil, on the top of water. Nevertheless, when even this small quantity is considered in relation to the enormous volume of water in the sea, the total amount of gold which the ocean contains mounts up to simply an unthinkable sum.

At from half to one grain per ton, a cubic mile of sea water contains between 130 and 260 tons of solid gold. At $20 an ounce—the actual value is somewhat in excess of this—a ton of gold is worth a little short of $500,000. In other words, a cubic mile of sea water contains gold to the value of between $65,000,000 and $130,000,000. On the surface of the globe it is computed that there are from 300,-000,000 and 400,000,000 cubic miles of ocean. Taking the smaller of these estimates, at half a grain per ton, the total amount of gold in the sea would be above thirty-five million billions. At one grain per ton it would be just twice this—in figures, $75,000,000,000,000,000.

It is almost impossible to grasp the magnitude of such a sum. Some comparisons will help. The total amount of gold in all the world at the present time is calculated at something like $5,000,000,000 or $6,000,000,-000. The computed wealth of the United States, and this is the richest nation on earth, is something like $60,000,000,000 or $70,000,-000,000. The gold wealth of the ocean is a million times this. The ocean is, indeed, a gold mine compared with whose value the present wealth of all the nations of the world sinks into insignificance.

Curiously enough, the presence of gold in the sea water was not suspected even by chemists until the announcement made by Prof. Wurtz in 1866, before the American Association for the Advancement of Science. Even then the fact was not generally accepted, and it was not until the famous English chemist Sonstadt reported investigations whose results confirmed the view of Prof. Wurtz that the fact was believed by scientific men. But neither Sonstadt nor Wurtz was able to secure more than a mere trace of the presence of the precious metal, and many chemists who came after them could not find even this. As late as two years ago the President of the Society of Chemical Industries of England declared, in his annual address, that "the presence of gold in sea water has not been satisfactorily determined."

Prof. Liversidge began his investigation at the University of Sydney something like two years ago, and has just reported the results to the Royal Society of Australia. The method which he employed was a long and complicated one, and in order to yield any results at all the utmost care and precision were required. The sea water, in chemically clean bottles, was first treated with a solution of pure ferrous sulphate dissolved in water, and to this solution a few drops of hydrochloric acid was added. This was then heated slowly, so as to prevent ebullition, and about half the water drawn off by evaporation.

In the process of heating a film of lustrous iron oxide was formed on the sides of the vessel, and when this had attained its maximum thickness the water was entirely poured off and this film treated with chlorine, the resulting solution then evaporated, and further treated with diluted hydrochloric acid. This liquid was then poured into test tubes containing a solution of stannous chloride. After standing still for a few minutes gold would then show in a thin bluish or purplish tint on the surface of the solution. Allowed to remain for some little time, a gray precipitate was formed, which, when dried, scorified and cupelled, yielded a minute bead of gold.

In order to check this process and also to determine whether all the gold contained in the sea water naturally had thereby been extracted, Prof. Liversidge made up an artificial solution containing small quantities of gold and subjected it to the same process. With the greatest care the loss in the gold recovered ranged from 10 to 34 per cent., revealing clearly that the sea water actually contains a considerably greater amount of gold than was revealed by Prof. Liversidge's process.

In order to establish his discoveries beyond any question, Prof. Liversidge employed several other processes of a similar nature, all of which yielded equally conclusive results, though not all of them revealed so large a quantity. The long controversy may, therefore, be regarded as finally settled.

But in the practical American mind the question remains, can the gold in the sea water ever be extracted at a profit? The question apparently does not greatly interest Prof. Liversidge, and it is reasonably certain that the long and complicated process by which he effected the extraction would mean an expense all out of proportion to the amount of gold obtained. This is where my part of the story comes in.

Some years ago, when on a roughing tour in the Northwest, on a lonely mountainside in the Cascades, I chanced upon a prospector holding down a stray claim. Starting on the idea, which was then a pure assumption, that gold actually existed in the sea water, the Professor, as I found the prospector was known, had devised a very simple and very ingenious apparatus for the electrical deposition of the gold upon chemically prepared metal plates. His idea was to arrange these plates in large sheets and subject them to an electric current of low voltage, the plates meanwhile being trailed from the rear of a vessel slowly traversing the ocean. When they were sufficiently coated with the deposit of gold they were to be hauled out and scraped, and then thrust back, the scrapings meanwhile being melted up into ingots.

Beside the Professor's estimates of the probable yield of his "mine," Col. Sellers's millions were mild. He foresaw such a flood of yellow metal as would make it a puzzle how to get the gold into property before its value would fall to nothing. He had considered every detail of the case, and carefully matured his plans.

"You see," he explained to me, "it would never do to patent this device, for that would immediately disclose the secret, and there would be no way in the world of preventing thousands of others from equipping ships with similar apparatus and mining in the sea, nor would there be any possible way of collecting royalties. In fact, you see, the royalties wouldn't be worth much of anything, anyway, because when the secret got out gold would simply be demonetized and its value fall to little or nothing."

The Professor, therefore, had evolved a plan to equip a large vessel, go off into unknown waters, and never touch land again until he had corralled enough gold from the sea to make everybody interested in the venture rich as a hundred Crœsuses. Then, having got this safely converted into property, the Professor figured to himself to make a long reach for undying renown by announcing his marvellous process.

I remember at the time I suggested to the Professor that at the sight of such ungodly stores of gold even the most Christian crew might rise up and butcher the proprietors and then divide the spoil. But the Professor was ready for me here as everywhere else. "Oh, dear me," he exclaimed, "I thought of that long ago. But the crew would never know that I was after gold at all. I would represent that I was engaged in the manufacture of iodine or bromide, or some other valuable chemical to be found in the sea, for the extraction of which I had found a new process."

To my further objection that it might not be possible to secure the deposition of all the gold in the sea water electrically, the Professor replied that "he didn't care about that, that he did not need a grain per ton—that he would be quite content with a tenth or even a hundredth of a grain per ton." Anyway I put it, "there were millions in it."

I am not going to disclose here the precise degree of credulity which I allowed myself in the Professor's colossal scheme, or what I ever did in the matter afterward. It is enough to say that some years have elapsed, and, so far as I know, the gold in the sea water still remains, and the Professor, if he be alive, is still, I doubt not, engaged in the arduous work of prospecting through the months of summer, and in swinging a baton through the winter to accumulate a "grub stake" for the opening of spring. For the rest, I had thought no more of the matter until the other day, when I came upon Prof. Liversidge's experiments. I carried the report to Prof. Crocker of Columbia, one of the foremost electricians of this county, with the intent to ask if in view of the fact that the quantity of gold in the sea water had now been definitely ascertained, there appeared any practical means for its profitable extraction.

And this is where the peculiar part of this story comes in. Prof. Crocker suggests the possibility of success with precisely the same process that my old friend in the Cascades had worked out. What Prof. Crocker said was this:

"If there is sufficient gold in the sea water a current of low voltage passed through the water will cause a deposition of the gold. This is equally true as regards silver. The current will attack gold and silver before any other substances. It is simply a process of selective electrolysis. It remains to be determined whether so small a quantity as a grain or half a grain could be precipitated.

"But it does not seem to me that it would be necessary to go to the expense of equipping a ship, or to drag your plates through the water. It seems to me that it would be quite sufficient to hang them underneath any docks that extend into the clear sea and are not around the mouths of rivers where the water will be full of slime. The action of the tides would present an ever fresh quantity of water to the plates, and as fast as they were covered they could be scraped and the gold separated out of the scrapings. In this way your process would be much cheaper, and as I take it the whole matter is a question of expense, and result, this would be an item.

"I am very far from saying that the thing is possible, but at the same time there are no flat impossibilities on the face of the matter. What I mean is just as I said at the first, that if there is a sufficient quantity of gold in solution, it can be precipitated electrically, and the only further matter to be determined is whether this can be done at a sufficiently low cost to make it profitable. A grain of gold is worth about a nickel, a half a grain, 2½ cents. A ton of sea water is roughly about a cubic metre—a little more than a cubic yard. Reduced to its simplest terms the problem is: How much of this gold can you get, and what will it cost you to get it? These are purely matters for experiment, and I do not doubt that some one will make the practical test."

It is indeed possible that these tests will be made in the Columbia School of Mines, under Prof. Crocker's direction. Meanwhile for those who are interested it may be worth mentioning that five years ago a Swedish professor of chemistry, Munster, proposed to stretch a series of plates across the mouth of an inlet from the sea, and test the question whether the gold would be deposited on these plates if they were properly prepared. Whether this was done I have never been able to find out.

CARL SNYDER.

THE MISSISSIPPI DELTA.

Changes Going On Near the Threatened Chief Pass to the Gulf.

From the St. Louis Globe-Democrat.

The Mississippi sprangles as it nears the Gulf. The great volume of water empties through three outlets. These are Pass a l'Outre, South Pass, and Southwest Pass. From the head of the passes, where the river divides into three parts, to the Gulf is about sixteen miles. Five years ago a crevasse opened in the bank of Pass a l'Outre. A mile and a half below the point where the river divides and about fourteen miles above the mouth the bank broke and gave a short cut to the Gulf. Through this crevasse the water has been pouring in a steadily increasing volume. It has worn a channel half a mile wide and of great depth. This short outlet is carrying off the water so fast that the volume which has hitherto gone by way of South Pass shows diminution. This means shoaling at the head of the passes. That shoaling is already apparent. The channel is decreasing in width and depth. Navigation begins to feel the effect. There will come, unless something is done, the practical blockade of the mouth of the Mississippi.

The delta of the Mississippi is settling. In the days when the river at high stage was allowed to spread over the low country and leave a deposit of silt, nobody paid any attention to the subsidence. The layer on top was equal to or greater than the settling. In the twenty years from 1876 to 1896 the Government has spent $38,000,000 between Cairo and the head of the passes. States and levee districts have added to this a large sum. The Mississippi is well confined. It no longer builds with each successive flood. Therefore the delta people begin to appreciate that they live on a sponge which drops a little with the squeezing of the water from it.

About 200 years ago the Spaniards built a brick fort on Balize Bayou on one of the now abandoned passes of the river. That fort stood with uncracked walls until a few years ago when portions of it were torn down and the material carried away. The surface of the water is now almost at the top of the arch over the entrance. The sill of that entrance is nearly twelve feet under water. Measurements taken when the jetties were being constructed and within a few months show that the land upon which the fort stands has sunken at the rate of one-tenth of a foot (over one inch) a year.

Bayou Balize was once a port of no small importance. The Spanish galleons cleared there. The Government stores were kept there. Residences were built on what was then high ground. Streets were laid out and paved with shells. The settlement extended down the bayou a mile. Balize is no longer habitable. The site is a part of the marsh. Except for short stretches, the shell streets are covered with water.

At the head of South Pass, when jetty building began, a railroad track used for transportation of coal and supplies came out to the edge of the river bank. The ground on which the railroad rested has gone down. Successive overflows have deposited sediment on top until today there is two or three feet of soil on the road and the ends of the rails can be seen sticking out of the steep river bank. They show in the diminished distance between them and the water's surface the settling, and also in the overlying alluvial the building that has taken place in twenty years.

There is a house, known as Cubett's, which was thirty years ago near the head of the passes. It was put on brick piers five feet above what was then ground. The earth's surface now is up to the sills of the building, but it is only about as much above the water's surface as the ground was thirty year's ago. Residents on the delta think the bottom of the Mississippi is rising. Engineers at first theorized that the level of the Gulf had come up sufficiently to account for the changes. Now, however, the scientific explanation is that the delta is settling. At the passes the rate of subsidence is over an inch a year. At a distance of twenty-five miles up the river the rate is only five-eighths of an inch. At New Orleans the rate is about five-sixteenths of an inch. In a report to the Chief of Engineers last year the engineer in charge of the New Orleans district stated that the gauge at the mouth of the Mississippi showed the waters of the Gulf had apparently risen a foot since 1877. As a matter of fact, the land on which the gauge was located had settled that distance. For periods the subsidence stops. Then it commences again. In the long run the delta settles and the water of the Gulf encroaches more and more.

The land of the delta is not only sinking, but it has a horizontal movement. Stake Island is a low but presumably solid piece of land near the mouth of Southwest Pass. Many years ago the Government engineers laid out with care a base line on Stake Island to use for surveying purposes. The pass was triangulated from it. The Coast Survey maps are based upon it. The buoys of the Lighthouse Board are located according to it. This base line was laid out originally as exactly 700 feet in length. When the present custodian took charge of Stake Island in 1871 he remeasured the base line, and found that it had grown; it was more than 700 feet long; it was 704.28 feet. The angles were considerably out. Subsequently the base line stretched to 707 feet, then to 710 feet, and the latest remeasurement showed 712 feet. The custodian found, upon making a large comparative chart, that any angle which had shown an increase at previous measurements had continued to grow larger, while any angle which had shown a decrease had kept on decreasing.

These facts and figures of the settling and the spreading are of interest as showing the unstable character of the delta. They help to understand what a difficult problem the engineers have encountered. Practical consequences are not very serious. It will be several centuries before New Orleans has to worry about subsidence. The question of what shall be done about the Pass a l'Outre crevasse is more pressing. In three years the Eads contract for twenty years' maintenance of the jetties will expire. The crevasse broke through in 1891. The executors of the Eads estate wasted no time in appeals to the Government, but as soon as the river fell made a vigorous effort to close the crevasse. In 1893 and in 1894 two hurricanes such as had not been experienced there for many years swept over the delta. They destroyed twice the work put in by the executors at a loss to the estate of over $150,000. With these two failures the executors have given up trying. They feel able to maintain the South Pass jetties and the channel at the required width and depth until 1897. Then the contract will expire, the withheld $500,000 of the $5,-300,000, for which Capt. Eads agreed to do the work, will be paid. And then will come the question:

What is the Government going to do about it?

THE NASTY COCKROACH.

FACTS ABOUT THE ANTELOPE OF THE INSECT WORLD.

Methods Devised to Destroy Him—The Different Varieties and Their Habits Described—Intelligence Displayed.

From the Washington Evening Star.

Roaches, writes C. L. Marlatt in a bulletin issued by the Agricultural Department, are among the commonest and most offensive of the insects which frequent human habitations. They were well known to the ancients, who called them "lucifuga," from their habit of always shunning the light. The common English name for them, or, more properly, for the common domestic English species, is "black beetle." In America this name has not been adopted to any extent for this insect, which was early introduced here, and the term "roach," or "cockroach," is the common appellation of all the domestic species. The little German roach, however, is very generally known as the Croton bug, from its early association with the Croton waterworks system in New York city. The popular designations of this insect in Germany illustrate in an amusing way both sectional and racial prejudices. In north Germany these roaches are known as "Schwaben," a name which applies to the inhabitants of south Germany, and the latter "even up" by calling them "Preussen," after the North Germans. In east Germany they are called "Russen," and in west Germany "Franzosen," the two latter appellations indicating a certain national antipathy to rival countries as well as a fanciful idea as to origin. Still other names are "Spanier," dating from the time of Charles V., and "Dane," from Denmark.

The roaches belong to a very extensive family, the Blattidæ, comparatively few of which, fortunately, have become domesticated. In temperate countries some four or five species are very common household pests, and a few occur wild in woods; but they are essentially inhabitants of warm countries, and in the tropics the house species are very numerous, and the wild species occur in great number and variety, many being striking in shape, color, and size, one species expanding more than six inches.

The inability of the domestic roaches to withstand unusual cold was illustrated by the fact that the severe weather in the winter of 1894 in Florida, which was so destructive to the citrus groves, on the authority of Mr. H. G. Hubbard, destroyed all the roaches, even those in houses, except a few unusually well protected. Under suitable conditions in the more northern latitude the domestic species often multiply prodigiously, and even in the far north a species occurs in the huts of the Laplanders, and sometimes entirely devours the stores of dried fish put away for winter consumption.

The roach is one of the most primitive and ancient insects, in the sense of its early appearance on the globe, fossil remains of roaches occurring in abundance in the early coal formations ages before the more common forms of insect life of the present day had begun to appear. The species now existing are few in number in comparison with the abundance of forms in the carboniferous age, which might with propriety be called the age of cockroaches, the moisture and warmth of that distant period being alike favorable to plant growth and the multiplication of this family of insects.

The house roaches of to-day were undoubtedly very early associated with man in his primitive dwellings, and through the agency of commerce have followed him wherever navigation has extended. In fact, on shipboard they are always especially numerous and troublesome, the moisture and heat of the vessel being particularly favorable to their development.

Although among the oldest insects geologically, roaches have not departed notably from the early types, and form one of the most persistent groups among insects. The house species are rather uniformly dark brown or dark colored, a coloration which corresponds with their habit of concealment during daylight. They are smooth and slippery insects, and in shape broad and flattened. The head is inflexed under the body, so that the mouth parts are directed backward and the eyes directed downward, conforming with their groveling habits. The antennæ are very long and slender, often having upward of 100 joints. The males usually have two pairs of wings, the outer ones somewhat coriaceous and the inner ones more membranous and once folded longitudinally. In some species, as, for instance, the black beetle, the females are nearly wingless. The legs are long and powerful, and armed with strong bristles or spines. The mouth parts are well developed, and with strong biting jaws, enabling them to eat all sorts of substances.

In houses roaches are particularly abundant in pantries and kitchens, especially in the neighborhood of fireplaces, on account of the heat. For the same reason they are often abundant in the oven rooms of bakeries or wherever the temperature is maintained above the normal. They conceal themselves during the day behind baseboards, furniture, or wherever security and partial protection from the light are afforded. Their very flat, thin bodies enable them to squeeze themselves into small cracks or spaces where their presence would not be suspected and where they are out of reach of enemies. Unless routed out by the moving of furniture or disturbed in their hiding places, they are rarely seen, and if so uncovered make off with wonderful celerity, with a scurrying, nervous gait, and usually are able to elude all efforts at their capture or destruction.

It may often happen that their presence, at least in the abundance in which they occur, is hardly realized by the housekeeper, unless they are surprised in their midnight feasts. Coming into a kitchen or pantry suddenly, a sound of the rustling of numerous objects will come to the ear, and if a light be introduced, often the floor or shelves will be seen covered with scurrying roaches hastening to places of concealment. In districts where the large American roach occurs they sometimes swarm in this way at night in such numbers that upon entering a small room in which they are congregated one will be repeatedly struck and scratched on the face and hands by the insects in their frantic flight to gain concealment.

The black roach is less active and wary than the others, and particularly the German roach, which is especially agile and shy.

The domestic roaches are practically omnivorous, feeding on almost any dead animal matter, cereal products, and food material of all sorts. They are also said to eat their own cast skins and egg cases, and it is supposed that they will attack other species of roaches, or are, perhaps, occasionally cannibalistic. They will also eat or gnaw woolens, leather (as of shoes or furniture), and frequently are the cause of extensive damage to the cloth and leather bindings of books in libraries and publishing houses. The sizing or paste used on the cloth covers and in the binding of books seems to be very attractive.

The surface of the covers of cloth-bound books is often much scraped and disfigured, particularly by the German cockroach (*Ectobia germanica*), and the gold lettering is sometimes eaten off to get at the albumen paste. On shipboard the damage is often very extensive on account of the vast numbers of cockroaches which frequently occur there, and we have reliable accounts of entire supplies of ship biscuits having been eaten up or ruined by roaches.

The damage they do is not only in the products actually consumed, but in the soiling and rendering nauseous of everything with which they come in contact. They leave, wherever they occur in any numbers, a fetid, nauseous odor, well known as the "roachy" odor, which is persistent and can not be removed from shelves and dishes without washing with soap and boiling water. Food supplies so tainted are beyond redemption. This odor comes partly from their excrement, but chiefly from a dark-colored fluid exuded from the mouth of the insect, with which it stains its runways, and also in part, doubtless, from the scent glands, which occur on the bodies of both sexes between certain segments of the abdomen, and which secrete an oily liquid possessing a very characteristic and disagreeable odor.

It frequently happens that shelves on which dishes are placed become impregnated with this roachy odor, and this is imparted to and retained by dishes to such an extent that everything served in them, particularly liquids, as coffee or tea, will be noticed to have a peculiar, disgusting, foreign taste and odor, the source of which may be a puzzle, and will naturally be supposed to come from the food rather than from the dish.

The roaches are normally scavengers in habit, and may at times be of actual service in this direction by eating up and removing dead animal material.

One other redeeming trait has been recorded of them, namely, that they will prey upon that other grievous pest of houses which are not subjected to careful supervision, the bedbug. Their habits in this direction have been recorded several times. One writer, in a narrative of a voyage, makes the following statement:

"Cockroaches, those nuisances to ships, are plentiful at St. Helena, and yet, bad as they are, they are more endurable than bugs. Previous to our arrival here in the Chanticleer we had suffered great inconvenience from the latter, but the cockroaches no sooner made their appearance than the bugs entirely disappeared. The fact is that the cockroach preys upon them and leaves no sign or vestige of where they have been. So that it is a most valuable insect."

The cockroach is, however, far too much of a nuisance itself to warrant its being recommended as a means of eradicating even the much more disagreeable insect referred to.

The following interesting letter from Mr. Herbert H. Smith, the collector and naturalist, gives a vivid picture of the roach nuisance in the tropics:

"Cockroaches are so common in Brazilian country houses that nobody pays any attention to them. They have an unpleasant way of getting into provision boxes, and they deface books, shoes, and sometimes clothing. Where wall paper is used they soon eat it off in unsightly patches, no doubt seeking the paste beneath. But at Corumba, on the upper Paraguay, I came across the cockroach in a new rôle. In the house where we were staying there were nearly a dozen children, and every one of them had their eyelashes more or less eaten off by cockroaches—a large brown species, one of the commonest kind throughout Brazil. The eyelashes were bitten off irregularly, in some cases quite close to the lid. Like most Brazilians, these children had very long, black eyelashes, and their appearance thus defaced was odd enough. The trouble was confined to children, I suppose because they are heavy sleepers and do not disturb the insects at work. My wife and I sometimes brushed cockroaches from our faces at night, but thought nothing more of the matter. The roaches also bite off bits of the toenails. Brazilians very properly encourage the large house spiders, because they tend to rid the house of other insect pests."

The local spread of roaches from house to house is undoubtedly often effected by their being introduced with supplies, furniture, goods, &c. That the croton bug, or German roach, and probably the other species also, may develop a migratory instinct has been witnessed by Dr. Howard and the writer in Washington.

This very interesting instance of what seems to have been a true migration, in which an army of thousands of roaches by one common impulse abandoned their old quarters and started on a search for a more favorable location, illustrates, as pointed out by Dr. Howard, what is probably of frequent occurrence under the cover of darkness, and accounts for the way in which new houses frequently become suddenly overrun with these vermin.

Like the crows among birds, the roaches among insects are apparently unusually well endowed with the ability to guard themselves against enemies, displaying great intelligence in keeping out of the way of the irate housekeeper and in avoiding food or other substances which have been doctored with poisons for their benefit. Their keenness in this direction is unquestionably the inheritance of many centuries during which the hand of man has ever been raised against them.

The means against these insects, including always vigilance and cleanliness as important preventives, are three, namely: destruction by poisons, by fumigation with poisonous gases, and by trapping.

As just noted, roaches often seem to display a knowledge of the presence of poisons in food, and, notwithstanding their practically omnivorous habits, a very little arsenic in baits seems to be readily detected by them. In attempting to eradicate roaches from the department store rooms where cloth-bound books are kept, various paste mixtures containing arsenic were tried, but the roaches invariably refused to feed on them in the least. This applies particularly to the German roach, or Croton bug, and may not hold so strongly with the less wary and perhaps less intelligent larger roaches.

A common remedy suggested for roaches consists in the liberal use of pyrethrum powder, or buhach, and when this is persisted in, considerable relief will be gained. It is not a perfect remedy, however, and is at best but a temporary expedient, while it has the additional disadvantage of soiling the shelves or other objects over which it is dusted. When used it should be fresh and liberally applied. Roaches are often paralyzed by it, when not killed outright, and the morning after an application the infested premises should be gone over, and all the dead or paralyzed roaches swept up and burned.

There are many proprietary substances which claim to be fairly effective roach poisons. The usefulness of most of these is, however, very problematical, and disappointment will ordinarily follow their application. The only one of these that has given very satisfactory results is a phosphorus paste, also sold in the form of pills. It probably consists of sweetened flour paste containing phosphorus, and is spread on bits of paper or cardboard and placed in the runways of the roaches. It has been used very successfully in the department to free desks from Croton bugs, numbers of the dead insects being found in the drawers every day during the time the poison was kept about.

Whenever roaches infest small rooms or apartments which may be sealed up nearly airtight, and also on shipboard, the roach nuisance can be greatly abated by the proper use of poisonous gases, notably bisulphide of carbon. The smoke of burning gunpowder is also very obnoxious and deadly to roaches, particularly the black English roach. On the authority of Mr. Theo. Pergande, gunpowder is commonly used in Germany to drive these roaches out of their haunts about fireplaces. The method consists of moulding cones of the moistened powder and placing them in the empty fireplace and lighting them. The smoke coming from the burning powder causes the roaches to come out of the crevices about the chimney and fire bricks in great numbers, and rapidly paralyzes or kills them, so that they may be afterward swept up and destroyed. This remedy will only apply to old houses with large fireplaces, and has no special significance for the modern house. It is presented, however, as a means applicable wherever conditions similar to those described occur.

Various forms of traps have been very successfully employed in England and on the Continent of Europe as a means of collecting and destroying roaches. These devices are all so constructed that the roaches may easily get into them and cannot afterward escape. The destruction of the roaches is effected either by the liquid into which they fall or by dousing them with hot water. A few of the common forms of traps and the methods of using them are here described.

A French trap consists of a box containing an attractive bait, the cover of which is replaced by four glass plates inclined toward the centre. The roaches fall from the covering glasses into the box, and are unable to escape. A similar trap used in England is described by Westwood. It consists of a small wooden box in which a circular hole is cut in the top and fitted with a glass ring, so that it is impossible for the roaches to escape. This trap is baited nightly, and the catch thrown into boiling water.

A simpler form of trap, which I am informed by Mr. F. C. Pratt is very successfully used in London, England, consists of any deep vessel or jar, against which a number of sticks are placed and bent over so that they project into the vessel for a few inches. The vessel is partially filled with stale beer or ale, a liquid for which roaches seem to have a special fondness. In the morning these vessels are found charged with great quantities of dead and dying roaches which have climbed up the inclined sticks and slipped off into the vessel. We have had fair success with this last method against the Oriental roach, but against the more wary and active Croton bug it seems less effective.

Traps of the sort described, placed in pantries or bakeries, will unquestionably destroy great quantities of roaches, and keep them, perhaps, more effectively in check than the use of the troublesome insect powders or the distribution of poisoned bait, especially as the latter are so often ineffective.

A correspondent informs us also that the common tree frog will clear rooms of roaches over night very effectually.

PATIENT ANGLERS.

Strangely Enough, Nervous Persons Are the Best Waiters for a Bite.

From the Youth's Companion.

It is one of the curiosities of human nature that the most nervous and excitable people are often the most patient fishermen with hook and line. This is true as to nations as well as individuals. The French, who are of all people perhaps the most mercurial or "tindery," are also of all races the most extravagantly devoted to angling; and Paris, their excitable and revolutionary capital, is a city of fishermen. A recent Parisian writer declares that the amateur fishermen are more numerous than ever.

"They form a double wreath of humanity on both sides of the Seine," he declares, "reaching from Charenton clear to Maison-Lafitte. For them were created the fortunate isles of Saint-Cloud and Croissy and the verdurous shores of Port-Marly and Chatou. Isolated there in the midst of tumult, calm in the very bosom of agitations, the passers-by smile at their aspect and gibe at their attitude and their immobility. 'They never catch a thing,' the passing skeptics say. What a mistake! The vulgar laity know naught of what these fishermen catch besides fish; for fish are not alone the things they go for." This means that the contemplation which is in a manner enforced on those who fish with hook and line, especially where no fish are to be found, often results in the apprehension of important things which would never have come if the fishermen had remained among the distracting scenes of Parisian life.

A distinguished French academician is accustomed to declare that he fished his academical chair out of the Seine with a hook and line, for the poems which really won for him his literary crown came to him while he was courting the wary gudgeon on the banks of the river. He is far from being the only author who has worked in this way. There are 300 and more living dramatists whose works have, in some shape, been brought out on the boards of the Paris theatres; and out of these, thirty have declared that they should never have had a single success if they had not elaborated their dramatic schemes while angling.

One of these dramatists once came back, radiant with glee, from a session of seven steady hours on the banks of the Seine. On his way home he met a friend. "Well, did you catch anything?" asked the friend. "Catch anything! Well, I should think I did! I caught a fifth act in three tableaux and a denouement that will draw all Paris!"

But he had not one fish. A somewhat amusing story is told of a Minister of the Interior, M. de Corbière, who was accustomed to get up every morning very early and go out with a hook and line to quiet his nerves on the banks of the Seine. There came to Paris a man from the provinces who had made application for a certain office, a sous-prefecture in the country. The office seeker had no influence with the Minister, but in some way he learned where the spot was to which the Minister went to fish.

Providing himself with "tackle," he rose still earlier than the Minister, and when M. de Corbière went to his favorite place he found a stranger installed there, paying no attention to the Minister, and apparently quite ignorant of his identity.

The Minister went somewhere else, and got up earlier the next morning; but on arriving at the place he found the same man installed there. Again and again this happened. It was useless to try to forestall the man. He was at the spot before the slightest break of dawn. At last the Minister approached the man and said politely:

"You seem to be very fond of fishing, sir?"

"I am, sir," answered the other, "and for the present I employ it as a means of passing the time while I am awaiting a response to an application which I have made to the Minister of the Interior."

"You are looking for an office?"

"A small prefecture, sir, in the country. I have waited a long time, and may have to wait still longer, but we fishermen, sir, know how to be patient."

"Will you kindly give me your name and address, sir? I have a little influence, perhaps, at the Department, and I shall be glad to mention your case. Between fishermen, sir——"

"Ah, I thank you! Here is my card."

That evening the office-seeker received his appointment and went no more to the banks of the Seine, and the Minister thereafter fished in peace in his accustomed spot.

YANKEE BIRDS OF PREY.

THEY ARE MAKING THINGS LIVELY IN THE POULTRY YARDS.

Welcome Main of Laurel Glen, Conn., Brings Down a Bald-Headed Eagle After Many Nights of Watching—Blue Hawks and Owls Keep the Shotguns Active.

NORWICH, Nov. 14.—Connecticut sportsmen and farmers have had lively sport lately bagging big birds that in most instances had paid marauding calls, after dusk, to the farmsteads among the lonely hills. For about a week, regularly, came a thief in the night or at break of day to the fowl house of Welcome Main at Laurel Glen, in the wilds of North Stonington, near the Rhode Island line. This thief helped himself to the fattened hens and pullets there, and slipped away as mysteriously as an old-time goblin.

Fancying that his visitor must be a wary old coon or fox, or, at least, a deeply artful skunk, the farmer sat up late at his open kitchen window for several nights, his breechloader across his knees, and the room darkened, until his teeth chattered with the frosty air, but the kitchen clock ground out the midnight hour, wheezing and chuckling about his fruitless vigil, and the graveyard quiet of his poultry yard and its environs was not interrupted. Mr. Main made a few pertinent remarks in a low tone at the end of his third trial, put up his gun, and stumbled off to bed. He slept a little later that night. Visiting his farmyard about an hour after dawn he found the skeleton of a fowl, freshly picked, which, unquestionably, had been slain by the elusive brigand while the farmer was reeling off his elongated morning snooze. Again he spoke his opinion of the thief.

On the following night, with a scheme in his head, the farmer went to bed about the time his fowls scaled their perches, and arose at the same hour with them in the morning. He stole out of his house noiselessly, and stumbling along the path to the barn, peeped over the the farmyard wall into the enclosure. One glance convinced him that the robber was there; an immense fellow he seemed in the uncertain light, and so busy picking the bones of a hen in the middle of the yard that he had no eye for anything else. He appeared to be as big and ferocious as a condor to the excited farmer, and akin to that bird in other respects. With his talons planted in his prey, and towering above it, he was ripping the fowl into ribbons, and devouring it with a greedy, clucking sound of his savage beak.

Not caring to tackle the big fellow unarmed, Mr. Main slipped noiselessly away from the farmyard into the house, and was back again in a moment with his double-barrelled shotgun, loaded for geese. But the bird had taken alarm and shot up into the air, the remnants of the hen in his claws, with a spread of pinions that reminded Mr. Main of the balloon ascension at the county fair this fall.

"The derned critter looked bigger'n a corn house," said the farmer later, in recounting his adventure. "The hull hen warn't a drop in ther bucket to him fur a lift, ef ye'll b'leve it; but about ther time he was skivin' sideways, sorter wallerin' and slidin' over ther peak o' ther barn, I drawed a bead on him, shut both eyes, and let go both barrels. They was big shot and they told. He went over backward 'k-chuck, as ef he'd run afoul of a church, an' down he came, end over end, wings spread out like sails, carromed on the barnyard wall, an' lit, plunk in ther mud an' on his back. The chick was still nailed an' spiked to his claws, or ruther what was left of it—ther framework an' underpinnin', backbone, a tail feather or two, an' head, the hull tied together with gristle."

Mr. Main examined his prize, which was nearly as big as a wild goose, and unlike any bird he had seen before. He dragged it into the house, the remains of the fowl still attached, and the neighbors came. Only one man was able to name the bird correctly. He said the farmer's booty was a bald-headed eagle, unusually big and formidable, the only bird of the species that had been seen in North Stonington in fifteen or twenty years.

Eagles used to be plentiful in the Nutmeg State, but it is rare that one is met with nowadays. Killing an American eagle is punishable with a fine of $25, but there were extenuating circumstances attending Mr. Main's act, which a court might allow, although the Nutmeg law does not discriminate.

At about dawn, in the same town, a day or two earlier, the young son of A. J. Main saw a big brown bird slide from a great height in the sky, with the speed of a rocket, straight as a line, into his father's yard, and nail a full-grown hen with his talons. The youth did not hesitate. He darted into his house, caught up his father's shotgun, and reappeared in the yard at just about the moment the freebooter was rising heavily with his victim above the high farmyard wall. With his first shot young Main plucked a double handful of feathers off the young robber's breast and back and set him staggering and floundering in midair. His second cartridge brought him to the ground lifeless, his prey still fast in his talons. This bird was an immense blue hawk, about as big and powerful as a bald eagle, and nearly as rare in this part of New England. The hawk was very heavy, and his tail was marked with stripes and colors like that of a blue jay.

Lewis B. Hawkins of Worcester, Mass., who has been passing the season with Mr. and Mrs. Burnside Crandall at their home in the hamlet of Clark's Falls in North Stonington, while strolling about the premises one afternoon a few days ago espied a big bird sailing majestically high above the Crandall homestead. He fancied the bird was merely amusing himself, and was not bent on business. Presently the big fellow paused, and for a second or two hung motionless as a cloud in midair; then suddenly, with hardly a warning movement, the bird shot to the earth. Into the Crandall fowl yard the fellow went, and transfixed with both claws a large hen. The hen died with barely a squeak, and thereupon the spoiler fell to work on her. Mr. Hawkins, who had not handled firearms before in thirty years, got the Crandall gun, and with a single shot bagged the thief. This bird, also, was a blue henhawk, finely marked and strong, although a young fellow. His spread of wing was four feet from tip to tip.

It was a night robber that came several times in succession to the homestead of Farmer Joseph Ryan, which is hung to the broad shoulders of Wallins Hill, among the foothills of the Berkshire Mountains, Litchfield county, in the northwestern part of Connecticut. That the thief was shy was apparent to Ryan at the outset, for do what he might to circumvent him, he came and went as elusively as a sprite. And on every one of his nocturnal calls the robber ate a hen, picking her bones clean. Three nights successively the farmer was awakened by an outcry in his fowl house, but each time when Mr. Ryan arrived at his poultry house the uproar had partly subsided, the fowls were scattered about the yard, and the robber was gone.

Finally, as the farmer was hurrying to the yard one night to succor his squawking fowls he saw the marauding bird suddenly leave the ground, bearing away his prey. The man hallooed and thrashed his arms violently, and the freebooter in his alarm let fall a rooster. Mr. Ryan had a pretty fair view of the invader, that seemed to him to be as big as a roc, although he was satisfied the bird was an owl.

Before returning to his chamber the farmer set a steel trap on a platform at the poultry house, and baited it with the remains of a rooster killed the night before. When he got up at daybreak he found the feathered robber of the previous night in the steel trap, which he was banging about the barnyard in his efforts to escape. He was the largest owl ever taken in Litchfield county.

The king of all henhawks was bagged a day or two ago in northeastern Connecticut by Orrin Moriarty, who shot the bird on the F. C. Jacobs farm, a little east of Wilsonville. Orrin presented the hawk to a newspaper friend of the Webster, Mass., *Review*, who had it handsomely mounted. The hawk measured just sixty-six inches from tip to tip.

While hunting in a dense swamp near White Hill, Derby, a few days ago, Milan Hubbell knocked down a giant blue heron that was wading in a swamp stream and fishing for dace. Herons are met with frequently in places of this kind, far from human habitations. The bird, which later was hung on a hook in the People's Market, in Elizabeth street, Derby, was 4 feet 10½ inches tall, and 6 feet from wing tip to wing tip. It was the largest heron, woodsmen say, ever seen in the town. The bird had a black and white top-knot.

Ephraim Burton of Stone Centre heard a queer noise among his fowls the other day, and found the whole flock skittering and flying about the farmyard, with a ferocious-looking bird in pursuit of them. He killed the intruder with a charge of shot. The bird was a young eagle, measuring 4½ feet from tip to tip. Mr. Burton is more than 80 years old, and has not fired a gun in many years.